REMARKS

Claims 1-8 and 12-15 are presently pending in the captioned application with no claim amendments being made at this time.

In the outstanding Office Action, the Examiner withdrew the finality of the previous Final Office Action of September 9, 2003, because the finality was not necessitated by Applicants amendment but rather the newly cited U.S. Patent No. 4,504,534 ("Adachi et al."). Applicants acknowledge that change with appreciation.

The Examiner also found Applicants previous arguments persuasive and withdrew the obviousness rejections over U.S. 5,714,227 ("Sugawara et al.") in view of U.S. 5,801,205 ("Nishibori et al.") and U.S. 5,602,223 ("Sasaki et al.") as well as the indefiniteness rejection under § 112, ¶ 2. Those indications are also acknowledged with appreciation.

The new rejections over the newly cited Adachi et al. reference are discussed herein without amendment. Applicants will show that Adachi et al. fails to teach and every claimed limitation either expressly or inherently and further fails to render obvious the specifically claimed limitations.

Accordingly, Applicants respectfully request the Examiner to carefully reconsider the rejections and allow all claims pending in this application in view of the following.

1. Rejection of Claims 1-8 and 12-15 under 35 U.S.C. § 112, ¶ 2

The Office Action rejects claims 1-8 and 12-15 under U.S.C. § 112, ¶ 2 as being indefinite for failing to particularly point out and distinctly claim the subject matter. The Office Action states:

> Claim 1 recites the limitation "inner surfaces" in line 3. There is insufficient antecedent basis for this limitation in the claim.

Applicants respectfully traverse the rejection because the term "inner surfaces" in line 3 of claim 1 would be reasonably ascertainable by those skilled in the art.

As noted by the Federal Circuit, a claim is not indefinite where one of ordinary skill could reasonably ascertain the scope of the claim. Ex parte Porter, 25 U.S.P.Q.2d 1144, 1145 (Bd. Pat. App. & Inter. 1992) ("controlled stream of fluid" provided reasonable antecedent basis for "the controlled fluid"). Moreover, inherent components of elements recited have antecedent basis in the recitation of the components themselves. For example, the limitation "the outer surface of said sphere" would not require an antecedent recitation that the sphere has an outer surface. See Bose Corp. v. JBL, Inc., 274 F.3d 1354, 1359, 61 USPQ2d 1216, 1218-19 (Fed. Cir 2001) (holding that recitation of "an ellipse" provided antecedent basis for "an ellipse having a major diameter" because "[t]here can be no dispute that mathematically an inherent

characteristic of an ellipse is a major diameter").

In the present application, claim 1 recites in the preamble a "multi-layer foamed parison having inner surfaces". Although the term "a" or "an" is not recited, it is noted that neither of these terms is necessary given that "inner surfaces" as recited in line 3 of claim 1 provides clear antecedent for one of ordinary skill in the art as to all subsequent instances of "inner surfaces". Similar to the finding in Bose Corp the recitation of "inner surfaces" is an inherent component having antecedent basis in the recitation of the component itself.

Accordingly, Applicants respectfully submit that the term provides antecedent basis and that the claims 1-8 and 12-15 are definite under § 112, ¶ 2 and request that the Examiner reconsider and withdraw the rejection.

2. Rejection of Claims 1-2, 4-7 and 13-15 under 35 U.S.C. § 102(b)

The Office Action rejects claims 1-2, 4-7 and 13-15 under U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,504,534 ("Adachi et al."). The Office Action states:

> With regard to claims 1-2, 4-7 and 13-15, Sugawara et al. disclose an article (an automobile bumper, therefore a shock absorber; column 2, lines 61-62) comprising a foamed polypropylene resin layer (column 2, lines 60-

> 68) having a density of 25 to 400 kilograms per cubic meter (column 2, lines 46-51) and an unfoamed polypropylene resin layer provided on the surface of the foamed polypropylene resin layer (column 2, lines 60-68). With regard to the claimed aspect of the foamed polypropylene having a melt tension and melt flow rate satisfying the first claimed relationship, and the unfoamed polypropylene having a melt tension and melt flow rate satisfying the second claimed relationship, both the first and second layers comprise polypropylene, as discussed above; the property of the foamed polypropylene having a melt tension and melt flow rate satisfying the first claimed relationship, and the unfoamed polypropylene having a melt tension and melt flow rate satisfying the second claimed relationship is therefore inherent to Adachi et al. With regard to the claimed aspect of the article being 'molded from a multilayer-foamed parison' and the polypropylene resin layers being 'formed from a first raw resin' and 'formed from a second raw resin', the scope of the claims falls within the limitations of Adachi et al. as discussed above. The method of making the article (product-by-process) is given little patentable weight.

Applicants respectfully traverse the anticipation rejection because Adachi et al. fails to teach the presently claimed MT and MFR logarithmic relationships. Furthermore, it appears that the fused core material of Adachi et al. is completely different from that of the presently claimed foamed layers. Although the Office Action alleges that Adachi et al. inherently discloses the claimed MT and MFR relationship, Applicants note that there is absolutely no support for this assertion anywhere in the disclosure of Adachi

et al. It is noted that an allegation of what might be taught can **never** be used as a basis for an anticipatory rejection. Clearly, one of ordinary skill in the art would never have been able to make the presently claimed logarithmic relationships without undue experimentation.

Turning to the rule, the Federal Circuit has spoken clearly and at some length on the question of anticipation. Anticipation requires that **each and every** element of the claimed invention be disclosed in a **single** prior art reference. Verdegaal Bros. v. Union Oil Co. of California, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Those elements must be **expressly** disclosed as in the claim. In re Bond, 15 USPQ2d 1566 (Fed. Cir. 1990).

The prior art reference must also be enabling, thereby placing the allegedly disclosed matter in the possession of the public. In re Brown, 329 F.2d 1006, 1011, 241 USPQ 245, 249 (C.C.P.A. 1964). In order to accomplish this, the reference must be so particular and definite that from it alone, without experiment or the exertion of his own inventive skill, any person versed in the art to which it pertains could construct and use it. Id. at 250.

Finally, the Federal Circuit has made clear that a negative pregnant is not enough to show anticipation. Rowe v. Dror, 112 F.3d 473, 42 USPQ2d 1550 (Fed. Cir. 1997). Thus, where a reference does not explicitly describe anything inconsistent with a claimed

use, if that reference nevertheless fails to make an affirmative suggestion of the claimed limitations, that reference cannot anticipate the claimed use. Id.

In the captioned application, presently pending claim 1 recites a skin-bearing article molded from a multi-layer foamed parison having inner surfaces mutually welded, comprising:

a foamed polypropylene resin layer having a density of 25 to 400 kg/m^3 formed from a first raw resin, and

an unfoamed polypropylene resin layer formed from a second raw resin provided on the outer side of the foamed polypropylene resin layer

said first raw resin forming the foamed polypropylene resin layer having a melt tension, MT_{fr} (gf), and a melt flow rate, MFR_{fr} (g/10 min), and satisfying the following relationship (1), and

said second raw resin forming the unfoamed polypropylene resin layer having a melt tension, MT_{ur} (gf), and a melt flow rate, MFR_{ur} (g/10 min), and satisfying the following relationships (2) and (3)

$$\log MT_{fr} > -0.74 \log MFR_{fr} + 0.66 \quad (1)$$

$$\log MT_{ur} > -1.02 \log MFR_{ur} + 0.47$$

$$\text{where } MFR_{ur} \geq 0.3 \quad (2)$$

$$MT_{ur} \geq 10 \text{ (gf)}$$

where $0.2 \leq MFR_{ur} < 0.3$ (3).

Adachi et al. simply fails to teach the presently claimed logarithmic relationships.

In particular, the logarithmic relationships are critical to the invention because they claim the relationship between the melt tension ("MT") and melt flow rate ("MFR") of a first raw resin that forms the foamed layer in a multi-layer parison and a second raw resin that forms the unfoamed layer in the same multi-layer parison. As shown by previously submitted Fig. 8, the relationship (1) in claim 1 is drawn on a double logarithmic chart where MT_{fr} is the vertical axis and represents the melt tension of the foamed layer. MFR_{fr} represents the melt flow rate of the foamed layer and is the horizontal axis.

The logarithmic relationships represent the melt tension and melt flow rate values for a first raw resin material forming the foamed layer whose MT_{fr} and MFR_{fr} are above the slope of the relationship shown in Fig. 8. For example, when MFR_{fr} is 10 (g/10 min), it means that material is used in which MT_{fr} has a log MT_{fr} value exceeding -0.08 according to relationship (1) or specifically in which MT_{fr} exceeds 0.83 (gf). When MFR_{fr} is 1 (g/10 min), it means that a material in which MT_{fr} has a log MT_{fr} exceeding 0.66, or specifically in which log MT_{fr} exceeds 4.57 (gf), is used as a polypropylene base material to form the foamed polypropylene resin

layer.

Fig. 9 represents relationships (2) and (3) of claim 1 drawn on a double logarithmic chart where MT_{ur} is the vertical axis and MFR_{ur} is the horizontal axis. The equation is drawn as a straight line for log MT_{ur} = 1. The variables represent the melt tension and melt flow rate of the unfoamed raw resin. The unfoamed raw resin has a MT_{ur} and MFR_{ur} falling above the range of the slope in Fig. 9. This means that with a polypropylene base material whose MFR_{ur} is in a range not lower than 0.2 but lower than 0.3 (g/10 min), a polypropylene base material with an MT_{ur} of at least 10 (gf) is used. With a polypropylene base material whose MFR_{ur} is at least 0.3 (g/10 min), a polypropylene base material whose MT_{ur} is greater than the MT_{ur} calculated from relationship (2) is used.

Fig. 10 represents relationship (4) in claim 2 drawn on a double logarithmic chart where MT_{fl} is the vertical axis and MFR_{fl} is the horizontal axis. The sample cut out from the foamed resin layer of the skin-bearing article in claim 2 is one in which MT_{fl} and MFR_{fl} are within the range of the slanting line in Fig. 10.

Fig. 11 represents relationships (5) and (6) in claim 2. A straight line for log MT_{rl} = 1 is drawn on a double logarithmic chart where MT_{rl} is the vertical axis and MFR_{rl} is the horizontal axis. The sample cut out from the resin layer of the skin-bearing article is one in which the MT_{rl} and MFR_{rl} are within the range of

the slanting line in Fig. 11. As shown in Fig.'s 9 and 11, both MFR_{ur} and MFR_{rl} must be 0.2 g/10 min or greater.

In combination, the claimed logarithmic relationships go far beyond what one of ordinary skill could make without undue experimentation. Turning to Adachi et al., Applicants note that the reference simply fails to provide any teachings regarding melt tensions and melt flow rates as reflected in Fig.'s 8-11 of the present invention.

Instead, the bumper taught by Adachi et al. is obtained by a process where a core material is formed by molding foamed particles of a polypropylene-type resin in a mold covered with a surface covering material made of polypropylene. In contrast, the molded article of the present invention is formed by molding a parison having a non-foamed resin layer on the outer side of a foamed resin layer. In other words, the core material of the bumper of Adachi et al. is obtained by filling foamed particles obtained by foaming particles of a propylene-type resin into a specifically shaped metal mold and then heating the mold wherein the foamed particles are then foamed and caused to fuse with each other to form a specific shape whereas the parison of the present invention is obtained by co-extruding a foaming molten resin containing a foaming agent and a molten resin free of any foaming agent from an extrusion machine wherein a non-foamed layer is formed on the outer

side of a foamed layer. Hence, the molded article of the present invention is obtained by molding this parison and not obtained by heating and molding the foamed particles in the mold as taught by Adachi et al.

The presently claims logarithmic relationships are required because it is difficult to select conditions wherein the molten resin can be extruded and foamed or when the softened multi layer parison is molded such that the resulting article has no cracks or holes on its non-foamed resin layer. This problem is overcome by setting specific ranges for the MT and MFR of the resin that constitutes the foamed layer, and for the MT and MFR of the resin that constitutes the non-foamed resin layer.

In contrast, the bumper described in Adachi et al. is obtained by a process in which the core material and the skin material are molded separately, and the two are then integrated. Therefore, the bumper of Adachi et al. is free from the technical problems encountered by the present invention. Not surprisingly, there is absolutely no disclosure in Adachi et al. concerning specific ranges such as those defined in the invention as claimed in the present application with respect to the MT and MFR of the resin or with respect to the MT and MFR of the resin that constitutes the skin material.

Accordingly, Applicants respectfully submit that Adachi et al.

very clearly fails to anticipate the presently claimed invention and request the Examiner to reconsider and withdraw the rejection.

3. Rejection of Claims 3, 8 and 12 under 35 U.S.C. §103(a)

The Office Action rejects claims 3, 8 and 12 under U.S.C. §103(a) as being unpatentable over U.S. Patent No. 4,504,534 ("Adachi et al."). The Office Action states:

> Adachi et al. disclose an article comprising foamed and unfoamed polypropylene layers as discussed above. With regard to claims 3, 8 and 12, Adachi et al. fail to disclose an unfoamed polypropylene layer having a thickness of 100 μm to 10 mm, and a skin layer formed on the outer side of the unfoamed polypropylene resin layer. However, Adachi et al. disclose one unfoamed polypropylene layer, as discussed above, the layer having a thickness of at least 1% of the thickness of the foamed resin layer (an unfoamed layer covers the surface; column 2, lines 60-68). Therefore, the number of unfoamed layers and the thicknesses of the layers would be readily determined through routine optimization by one having ordinary skill in the art depending on the desired end result as shown by Adachi et al., in the absence of unexpected results. *In re Boesch and Slaney, 205 USPQ 215 (CCPA 1980).*

Applicants respectfully traverse this rejection because all the claimed limitations have not been taught by the cited references. It is noted that claims 3, 8 and 12 depend from claim

1 or 2. Therefore, claims 3, 8 and 12 incorporate all the limitations of the dependent claims 1 and 2. Since the Adachi et al. reference fails to teach all the claimed logarithmic relationships of the independent claims 1 and 2 as noted supra in the traversal of the anticipation rejection under § 102(b), Adachi et al. in turn also fails to teach each and every one of the limitations of the dependent claims 3, 8 and 12, which also incorporate the limitations of claims 1 and 2.

As noted repeatedly, a *prima facie* case of obviousness must establish: (1) some suggestion or motivation to modify the references; (2) a reasonable expectation of success; and (3) that the prior art references **teach or suggest all claim limitations**. Amgen, Inc. v. Chugai Pharm. Co., 18 USPQ2d 1016, 1023 (Fed. Cir. 1991); In re Fine, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988); In re Wilson, 165 USPQ 494, 496 (C.C.P.A. 1970).

Furthermore, Applicants traverse the allegation that the presently claimed are mere optimization of results effect variable given that one of ordinary skill at the time of invention would not have known that the logarithmic relationships of claim 1:

$$\log MT_{fr} > -0.74 \log MFR_{fr} + 0.66 \quad (1)$$

$$\log MT_{ur} > -1.02 \log MFR_{ur} + 0.47 \quad \text{where } MFR_{ur} \geq 0.3 \quad (2)$$

$$MT_{ur} \geq 10 \text{ (gf)} \quad \text{where } 0.2 \leq MFR_{ur} < 0.3 \quad (3)$$

and the logarithmic relationships of claim 2:

$$\log MT_{fl} > -0.74 \log MFR_{fl} + 0.79 \quad (4)$$

$$\log MT_{rl} > -1.02 \log MFR_{rl} + 0.69$$

$$\text{where } MFR_{rl} \geq 0.5 \quad (5)$$

$$MT_{rl} \geq 10 \text{ (gf)}$$

$$\text{where } 0.2 \leq MFR_{rl} < 0.5 \quad (6)$$

would result in the presently claimed invention. It is noted that only the presently claimed limitations overcome problems related to low density skin-bearing articles. Only Applicants' novel and unobvious multi-layer foamed parison has superior physical properties and a desirable low density of 25 to 400 kg/m^3.

In particular, none of the cited references teach the claimed logarithmic relationships between the melt tension and melt flow rate to produce a low density polypropylene skin bearing article. Moreover, there is no teaching provided in the art that would have suggested or motivated one of ordinary skill to make or even undertake a study of the presently claimed logarithmic relationships between melt tension and melt flow rate.

Accordingly, Applicants respectfully submit that Adachi et al. very clearly fails to render obvious the presently claimed invention and request the Examiner to reconsider and withdraw the rejection over claims 3, 8 and 12.

CONCLUSION

In light of the foregoing, Applicants submit that the application is now in condition for allowance. The Examiner is therefore respectfully requested to reconsider and withdraw the rejection of the pending claims and allow the pending claims. Favorable action with an early allowance of the claims pending is earnestly solicited.

Respectfully submitted,

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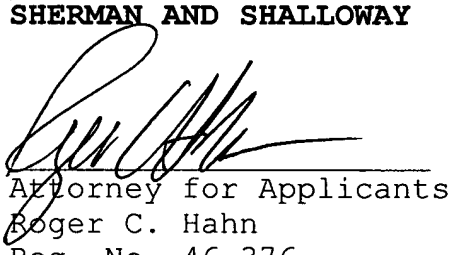

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